

## CLAIMS

1. A device for determining the position of a vehicle on a roadway by using radio waves which are emitted from the device and reflected by the vehicle and received by at least two array antennas (1, 2) arranged across the roadway, **characterized** in that the array antennas (1, 2) comprise a number of antenna elements (5-14), one of the antenna elements in the respective array antenna constituting the phase center (5, 10) of the array antennas, and wherein the antenna elements (5-14) of the array antennas are connected to one another such that the distance (d) between the phase centers (5, 10) of the array antennas (1, 2) included is smaller than half the width of an individual array antenna (1, 2).

2. A device according to claim 1, **characterized** in that the connection comprises interweaving the array antennas (1, 2) with each other in that the phase center (5, 10) of one array antenna is arranged among the antenna elements (11-14, 6-9) of another array antenna (1, 2).

3. A device according to claim 2, **characterized** in that the phase centers (5, 10) of the respective array antennas (1, 2) are placed close to each other.

4. A device according to claim 2, **characterized** in that some of the antenna elements (24-38) are at the same time connected to more than one array antenna (21, 22, 23).

5. A device according to claim 4, **characterized** in that signals obtained from antenna elements (24-38) which are utilized by more than one array antenna (21, 22, 23) undergo power amplification, followed by power division of the amplified signal on the respective array antenna (21, 22, 23).

6. A device according to any of the preceding claims, **characterized** in that an azimuth angle  $\theta$  to the vehicle (3)

5 7. A device according to claim 6, **characterized** in that an angle of elevation to the vehicle (3) is determined from an antenna position where at least one pair of substantially vertically arranged array antennas is arranged.

10 8. A device according to claim 7, **characterized** in that the position of the vehicle in relation to the antennas is determined by means of knowledge of the azimuth angle  $\theta$  and the angle of elevation.

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